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24

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,860	09/27/2001	Masataka Masuda	P07340US00/	5469

881 7590 01/15/2004  
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EXAMINER  
NGUYEN, TAM M

ART UNIT PAPER NUMBER

1764

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.	Applicant(s)	
09/913,860	MASUDA ET AL.	
Examiner	Art Unit	
Tam M. Nguyen	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

**DETAILED ACTION**

***Response to Amendment***

The objection to claim 7 is withdrawn by the examiner in view of the amendment filed on October 20, 2003.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Logsdon et al. (4,876,402).

Logsdon discloses a method for making a composition by mixing a mixture containing a copper compound and a zinc compound with an aqueous solution of an alkali substance to prepare a precipitate which is then calcined and formed into a shaped form (e.g., table molding) of copper oxide-zinc oxide mixture. Nickel is then impregnated into the shaped form. The nickel impregnated mixture is then calcined to produce calcinated oxide and the calcined oxide is reduced with hydrogen. (See col. 3, lines 6 through col. 4, lines 58; col. 5, line 7 through col. 7, line 14)

Claim 1 is directed to a "manufacturing method" and the preamble phrase "a desulfurizing agent" is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 1.

Art Unit: 1764

Claim 2:

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 2. (See col. 7, lines 9-51)

Claim 3:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a diluted hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the diluted hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the diluted hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 3. (See col. 4, lines 3-14)

Claim 4:

The method of making the catalyst is as discussed above.

Logsdon also discloses that the mixture of copper and zinc compounds can be prepared in the presence of aluminum compound (e.g., alumina). See col. 3, lines 49-56; col. 4, lines 59-68

Claim 4 is directed to a "manufacturing method" and the preamble phrase "a desulfurizing agent" is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 4.

Claim 5:

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 5. (See col. 7, lines 9-51)

Claim 6:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a diluted hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the diluted hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the diluted hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 6. (See col. 4, lines 3-14)

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-06-22870 in view of Logsdon et al. (4,876,402).

The JP patent discloses a desulfurization process by contacting a raw hydrocarbon feed with a catalyst comprising Cu, Zn, and Ni, in the presence of hydrogen. (See paragraphs 0016-0029)

Claim 7:

The JP patent does not specifically disclose that nickel is impregnated into the calcined copper oxide-zinc oxide mixture. However, Logsdon discloses a method of making a catalyst comprising Cu, Zn, and Ni as claimed (see col. 3, lines 6 through col. 4, lines 58; col. 5, line 7 through col. 7, line 14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the JP Patent by utilizing the method of impregnation of nickel into the calcined copper oxide-zinc oxide mixture as taught by Logsdon because the JP patent discloses that various kinds of mixing methods of the solution of metallic compounds, and a precipitant, etc., can be applied (see paragraph 0022). Hence, one of skill in the art would use any method of making a catalyst including the method of Logsdon because such method is effective to produce a catalyst.

Claims 8 and 10:

The raw hydrocarbon is a town gas and the molar ratio of hydrogen to town gas is 0.36.  
(See paragraphs 25 and 41)

Claims 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over references as applied to claims 7 and 10 above, and further in view of EP-1192981.

The JP patent discloses that the desulfurization step is operated at a pressure of from 1 - 10 kg/cm<sup>2</sup> (1 - 10 atm) and at a temperature of from 280-380° C and wherein the raw hydrocarbon is town gas. (See paragraphs 0025, 0029, and 0030)

Claims 9 and 11:

The JP patent does not disclose that the desulfurization step is operated at a space velocity (GHSV) of 200 to 10,000 h<sup>-1</sup>. However, the EP patent discloses a hydrodesulfurization process wherein the process is operated at a space velocity (GHSV) of 200 - 4,000. (See page 4; lines 16-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the JP patent by operating the desulfurization step at a space velocity as taught by the EP patent because such space velocity is effective in a desulfurization process.

Claim 12:

The JP patent does not disclose that the desulfurization is formed so that the sulfur content in the town gas is not more than 6 ppb. However, the modified process of the JP patent is similar to the claimed process in terms of feedstock, operating conditions, and catalyst. Therefore, it would be expected that the modified desulfurization process of the JP patent would have the sulfur content in the town gas as claimed.

*Response to Arguments*

The argument that the Logsdon reference discloses a hydrogenation of aldehydes to the corresponding alcohols which is totally different from a desulfurization process and those skilled in the art would not expect "desulfurizing agent" from Logsdon are directed only to "hydrogenation" is not persuasive because claims 1-6 direct to a method of making a composition and Logsdon discloses a method of making a catalyst that is the same as the claimed method. Again, the examiner reminds applicants that the preamble phrase "a desulfurizing agent" is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claims 1-6.

The argument that the subject matter of Logsdon is to improve the composition, not to improve the method for preparing the composition is not persuasive because regardless of what the intended purpose of Logsdon is, the method of making a catalyst of Logsdon is the same as the claimed method. Therefore, the rejection is maintained.

The argument that the agent in reference JP-06-022870 (called as reference JP from now on) is introduced from a mixture solution containing not only copper nitrate and zinc nitrate but also nickel nitrate is not persuasive because the limitation "using the desulfurizing agent described in claim 1" in claim 7 means that the desulfurization process used a desulfurizing agent comprising Zn, Cu, and Ni. Claim 7 does not incorporate the method of making the desulfurizing agent in claim 1. Even if claim 7 incorporates the method of making of the agent of claim 1, one of skill in the art would employ the method of making a catalyst of Logsdon because reference JP discloses that various kinds of mixing methods of the solution of metallic compounds, and a precipitant, etc., can be applied (see paragraph 0022).



The argument that EP-1192989 is totally silent about the use of iron or nickel is not persuasive because the examiner modified the process of JP-06228570/Logsdon by utilizing a known space velocity in a desulfurization process as taught by the EP reference. The examiner does not use the catalyst of the EP reference.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

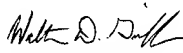
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1764

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen  
Examiner  
Art Unit 1764

TN

  
**Walter D. Griffin**  
**Primary Examiner**